

Central Vermont Public Service Corporation

JUN 23 10 56 AM '94

June 21, 1994

Mr. Charles Schwer
Sites Management Section
Department of Environmental Conservation
103 South Main St./West Building
Waterbury, VT 05671-0404

RE: CVPS Woodstock Service Center (Site #90-502)

Dear Mr. Schwer:

The enclosed DuBois & King report discusses the results of the May 5, 1994 groundwater sampling at the CVPS Woodstock Service Center. The monitoring results reveal some new information on groundwater flow trends and on contaminant distribution. DuBois & King suggest that we continue sampling twice yearly and exclude MW-5 in the future. The justification of their recommendations is in their report.

If you concur with DuBois & King's recommendations, CVPS will authorize the continuation of this program. Under this program, October is the next scheduled date for groundwater sampling. CVPS is also requesting DuBois & King's comments on the feasibility of active corrective actions at this site. We would also welcome any comments that you have on active corrective actions.

CVPS discovered an unpermitted waste oil tank at the service center. We notified the UST program and we intend to resolve this issue this summer. The tank's location and contents imply that this tank is not contributing to the groundwater contamination at the site.

If you have any questions about the monitoring program or any comments on active corrective action, please call me at 747-5707.

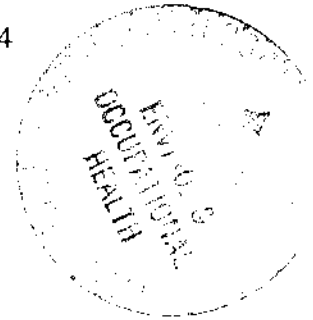
Sincerely,

John C. Greenan, P.E.
Environmental Engineer

77 Grove Street,
Rutland, Vermont 05701
802-773-2711



R11896P7
June 2, 1994



Mr. John Greenan
Central Vermont Public Service Corporation
77 Grove Street
Rutland, Vermont 05701

**SUBJECT: Additional Monitoring at Woodstock Service Center (ANR-HMMD Site
No. 90-0502)**

Dear Mr. Greenan:

We have completed the second round of additional site monitoring that was recommended in our site assessment report dated June 2, 1993, and our revised scope of services dated August 6, 1993. The project work was completed in accordance with the work plan previously approved by the Agency of Natural Resources Hazardous Materials Management Division Sites Management Section.

The purpose of this report is to transmit the latest round of groundwater analysis results and summarize the site monitoring completed to date.

CUMULATIVE GROUNDWATER MONITORING RESULTS:

Table 1 summarizes the water table elevations collected during the last two rounds of complete sampling. These elevations are based on an assumed site datum of 100.0 (top of MW-1 casing). In general, the groundwater elevations, gradient and flow directions have remained consistent over the monitoring period. The localized groundwater flow through the site is generally westerly with components towards the nearest two points of the river bend that lies to the west of the site. The groundwater elevations at Monitoring Well No. 1 appear to be influenced by the proximity of the building and the additional fill material brought in after the excavation and removal of the tank in this area. Monitoring Well No. 1 was not utilized in the estimation of the relative groundwater contours across the site. The groundwater contours for the sampling event are shown on the attached site plan.

As noted in previous reports, the groundwater flow direction is influenced by the loop of the river to the west of the site and the groundwater flow gradient across the site. In general, it appears that the groundwater flow direction tends to be more west/southwest during the fall sampling events (in which case MW-4 and MW-6 catch the contaminant plume and MW-3 is on the fringe or just outside the contaminant plume) and west/northwest during the spring sampling event (in which case MW-3 and MW-6 catch the contaminant plume and MW-4 is on the fringe or just outside the contaminant plume).

Tables 2, 3, 4, 5 and 6 summarize the laboratory analysis data collected for each of the wells since their installation. Monitoring well MW-1 was originally installed at the UST location after tank removal. Eight rounds of sampling have been completed at this well. The BTEX levels and total FID hydrocarbons remain high. The Benzene and MTBE levels appear to be lower than previous spring sampling events, but the levels of contamination remain significant indicating that there is still some residual soil contamination in place at the former UST location.

Monitoring Well MW-2 was installed in an upgradient direction from the former UST location to provide background quality data for the site. No contamination has ever been detected in this well, and it was not sampled (except for water table elevation) during this latest round.

Monitoring Well MW-3 was installed downgradient and to the north of the former UST location. The well has shown the seasonal increase in contamination as discussed above. The levels of contamination are less than last year's spring sampling event. This could be indicative of a downward trend in contaminant migration, but it is too early to draw such a conclusion.

Monitoring Well MW-4 was installed in what was assumed to be the immediate downgradient direction from the former UST location based on field measurements during well installation. The well has shown the seasonal decrease in contamination as discussed above, and no contamination levels about practical quantitation limits were noted.

Monitoring Well No. 5 was installed on the southerly edge of the assumed contaminant plume to better determine the horizontal extent of the plume in this direction. It was intended to be the next monitoring point south of MW-4. No BTEX contamination was detected in this well during the first two rounds of sampling. It is recommended that this well not be included in any future rounds of sampling (except for groundwater elevation measurement) unless MW-4 begins to show an increasing, persistent trend in contaminant levels.

Monitoring Well No. 6 was installed between MW-4 and MW-3 to provide a more consistent monitoring of the major portion of the plume (which appears to waver between MW-4 and MW-3 dependent upon seasonal variations in the groundwater flow pattern). Increased BTEX contamination was detected in this well during the May 1994 sampling event as well as continued, elevated levels of MTBE and FID hydrocarbons.

The laboratory analysis sheets from the last round of sampling is attached to this report for your file information. From the historic groundwater monitoring data it appears that the contaminant plume is roughly bounded by a triangle drawn between MW-1, MW-3 and MW-4 and is migrating off of the CVPS property to the west with MW-6 being the primary monitoring point for the plume (it is only secondarily affected by the seasonal shift in groundwater flow directions and gradient).

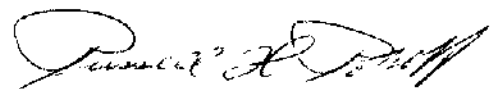
Mr. John Greenan
Central Vermont Public Service Corporation
June 2, 1994
Page 3

A review of the laboratory data report sheets indicates that there was some BTEX contamination in the field blank. The laboratory indicated that the monitoring wells were sampled in order of degradation, from the cleanest to the dirtiest. The order followed was MW-5, MW-4, MW-3, MW-6 and MW-1. The field blank was collected from the final bailer rinse after MW-1 (the most contaminated well) was sampled. Although the presence of BTEX in the bailer rinse indicates that this particular bailer cleaning was not thorough enough, the order of sampling followed would have prevented cross-contamination between wells that would have been significant enough to change the results.

We trust that this information is adequate for your present reporting of the site conditions to the Agency of Natural Resources. It is our opinion that they will ask for additional site monitoring using the same twice-a-year sampling frequency and analysis parameters. As noted in an earlier section of this letter report, we recommend that MW-5 be dropped from the required sampling program unless MW-4 begins to show increased or persistent levels of contamination. It appears that MW-5 lies outside of the contaminant plume and that MW-4 is adequate to monitor the southwesterly edge of the plume. As always, it is our pleasure to be of continued service to CVPS Corporation in their site monitoring evaluations. This completes the work tasks which were outlined in our scope of services. We would be happy to present proposed costs for any future rounds of sampling that may be required by the state.

Very truly yours,

DuBOIS & KING, INC.



Russell W. Rohloff, P.E.
Project Manager

Enclosures

**DuBois
& King** inc.

ENGINEERING • PLANNING • DEVELOPMENT • MANAGEMENT

Table 1

CVPS CORPORATION - WOODSTOCK SERVICE CENTER

**Monitoring Well &
Groundwater Table Data**

	Water Elevation 10-1-93	Water Elevation 5-5-94
Monitoring Well No. 1	85.60	88.80
Monitoring Well No. 2	94.09	97.89
Monitoring Well No. 3	86.55	86.75
Monitoring Well No. 4	78.98	81.26
Monitoring Well No. 5	76.45	80.85
Monitoring Well No. 6	80.77	81.07

Water Elevations are based on an assumed site datum of 100.0, the top of MW-1 well casing.

Table 2

CVPS CORPORATION - WOODSTOCK SERVICE CENTER

Underground Storage Tank Site Monitoring Program
(Monitoring Well 1: at location of UST)

Organic Compounds	Contaminant Maximum Levels (ppb)	12-16-90 Sampling (ppb)	5-31-91 Sampling (ppb)	10-14-91 Sampling (ppb)	7-1-92 Sampling (ppb)	10-26-92 Sampling (ppb)	5-5-93 Sampling (ppb)	10-1-93 Sampling (ppb)	5-5-94 Sampling (ppb)
Benzene	5	2,480	1,320	2,410	1,420	1,130	242	1,160	169
Toluene	1,000	5,960	2,420	8,320	2,760	1,740	1,800	3,800	2,080
Ethylbenzene	700	1,460	686	142	927	610	652	1,990	733
Total Xylenes	10,000	9,130	4,520	11,600	4,612	3,540	4,490	7,680	5,020
BTEX	-----	19,030	8,946	22,500	9,719	7,020	7,184	15,130	8,002
Chlorobenzene	100	<200	<100	<20	<100	<100	<200	<1000	<50
1,2 Dichlorobenzene	600	<200	<100	<20	<100	<100	<200	<1000	<50
1,3 Dichlorobenzene	600	<200	<100	<20	<100	<100	<200	<1000	<50
1,4 Dichlorobenzene	75	<200	<100	<20	<100	<100	<200	<1000	<50
n-Hexane	-----	584	331	160	230	200	----	----	----
TOTAL FID as n-Hexane	-----	46,500	27,900	59,300	29,800	4,620	14,00	15,200	12,100
MTBE	20 (HAL)	546	1,080	600	830	716	<200	<1000	122

BPQL = Below Practical Quantitation Limits (for this test, 1 ppb)

HAL = Health Advisory Limit

Table 3

CVPS CORPORATION - WOODSTOCK SERVICE CENTER

Underground Storage Tank Site Monitoring Program
(Monitoring Well 2: Upgradient of UST)

Organic Compounds	Contaminant Maximum Levels (ppb)	10-14-91 Sampling (ppb)	7-1-92 Sampling (ppb)	10-26-92 Sampling (ppm)	5-5-93 Sampling (ppb)
Benzene	5	BPQL	BPQL	BPQL	BPQL
Toluene	1,000	BPQL	BPQL	BPQL	BPQL
Ethylbenzene	700	BPQL	BPQL	BPQL	BPQL
Total Xylenes	10,000	BPQL	BPQL	BPQL	BPQL
BTEX	-----	BPQL	BPQL	BPQL	BPQL
Chlorobenzene	100	BPQL	BPQL	BPQL	BPQL
1,2 Dichlorobenzene	600	BPQL	BPQL	BPQL	BPQL
1,3 Dichlorobenzene	600	BPQL	BPQL	BPQL	BPQL
1,4 Dichlorobenzene	75	BPQL	BPQL	BPQL	BPQL
n-Hexane	-----	BPQL	BPQL	BPQL	-----
TOTAL FID as n-Hexane	-----	BPQL	BPQL	BPQL	BPQL
MTBE	20 (HAL)	BPQL	BPQL	BPQL	BPQL

BPQL = Below Practical Quantitation Limits (for this test, 1 ppb)

HAL = Health Advisory Limit

This well is the upgradient well and is no longer sampled as part of the on-going site monitoring. This was agreed to by the ANR-HMMD-SMS.

Table 4

CVPS CORPORATION - WOODSTOCK SERVICE CENTER

Underground Storage Tank Site Monitoring Program
(Monitoring Well 3: Downgradient of UST)

Organic Compounds	Contaminant Maximum Levels (ppb)	10-14-91 Sampling (ppb)	7-1-92 Sampling (ppb)	10-26-92 Sampling (ppb)	5-5-93 Sampling (ppb)	10-1-93 Sampling (ppb)	5-5-94 Sampling (ppb)
Benzene	5	64	11	4	26	BPQL	4
Toluene	1,000	54	3	6	165	BPQL	14
Ethylbenzene	700	198	26	21	150	BPQL	14
Total Xylenes	10,000	430	52	73	2,278	13	301
BTEX	-----	746	92	104	2,619	13	333
Chlorobenzene	100	<50	BPQL	BPQL	<20	BPQL	BPQL
1,2 Dichlorobenzene	600	<50	BPQL	BPQL	<20	BPQL	BPQL
1,3 Dichlorobenzene	600	<50	BPQL	BPQL	<20	BPQL	BPQL
1,4 Dichlorobenzene	75	<50	BPQL	BPQL	<20	BPQL	BPQL
n-Hexane	-----	<50	2	BPQL	----	-----	-----
TOTAL FID as n-Hexane	-----	2,240	512	376	7,343	28	1610
MTBE	20 (HAL)	<50	2	BPQL	<20	BPQL	2

BPQL = Below Practical Quantitation Limits (for this test, 1 ppb)

HAL = Health Advisory Limit

Table 5

CVPS CORPORATION - WOODSTOCK SERVICE CENTER

Underground Storage Tank Site Monitoring Program
 (Monitoring Well 4: Downgradient of UST)

Organic Compounds	Contaminant Maximum Levels (ppb)	10-14-91 Sampling (ppb)	7-1-92 Sampling (ppb)	10-26-92 Sampling (ppb)	5-5-93 Sampling (ppb)	10-1-93 Sampling (ppb)	5-5-94 Sampling (ppb)
Benzene	5	BPQL	77	304	BPQL	8	BPQL
Toluene	1,000	BPQL	BPQL	<10	BPQL	BPQL	BPQL
Ethylbenzene	700	BPQL	BPQL	<10	BPQL	BPQL	BPQL
Total Xylenes	10,000	BPQL	BPQL	<10	BPQL	BPQL	BPQL
BTEX	-----	BPQL	77	304	BPQL	8	BPQL
Chlorobenzene	100	BPQL	BPQL	<10	BPQL	BPQL	BPQL
1,2 Dichlorobenzene	600	BPQL	BPQL	<10	BPQL	BPQL	BPQL
1,3 Dichlorobenzene	600	BPQL	BPQL	<10	BPQL	BPQL	BPQL
1,4 Dichlorobenzene	75	BPQL	BPQL	<10	BPQL	BPQL	BPQL
n-Hexane	-----	BPQL	BPQL	<10	----	----	----
TOTAL FID as n-Hexane	-----	BPQL	594	1,260	BPQL	439	BPQL
MTBE	20 (HAL)	43	570	910	BPQL	462	BPQL

BPQL = Below Practical Quantitation Limits (for this test, 1 ppb)

HAL = Health Advisory Limit

Table 6

CVPS CORPORATION - WOODSTOCK SERVICE CENTER

Underground Storage Tank Site Monitoring Program
(Monitoring Well 5: Downgradient of UST)

Organic Compounds	Contaminant Maximum Levels (ppb)	10-1-93 Sampling (ppb)	5-5-94 Sampling (ppb)
Benzene	5	BPQL	BPQL
Toluene	1,000	BPQL	BPQL
Ethylbenzene	700	BPQL	BPQL
Total Xylenes	10,000	BPQL	BPQL
BTEX	-----	BPQL	BPQL
Chlorobenzene	100	BPQL	BPQL
1,2 Dichlorobenzene	600	BPQL	BPQL
1,3 Dichlorobenzene	600	BPQL	BPQL
1,4 Dichlorobenzene	75	BPQL	BPQL
n-Hexane	-----	-----	-----
TOTAL FID as n-Hexane	-----	BPQL	BPQL
MTBE	20 (HAL)	BPQL	BPQL

BPQL = Below Practical Quantitation Limits (for this test, 1 ppb)

HAL = Health Advisory Limit

Table 7

CVPS CORPORATION - WOODSTOCK SERVICE CENTER

Underground Storage Tank Site Monitoring Program
(Monitoring Well 6: Downgradient of UST)

Organic Compounds	Contaminant Maximum Levels (ppb)	10-1-93 Sampling (ppb)	5-5-94 Sampling (ppb)
Benzene	5	89	409
Toluene	1,000	<10	12
Ethylbenzene	700	<10	224
Total Xylenes	10,000	<10	20
BTEX	-----	89	665
Chlorobenzene	100	<10	<10
1,2 Dichlorobenzene	600	<10	<10
1,3 Dichlorobenzene	600	<10	<10
1,4 Dichlorobenzene	75	<10	<10
n-Hexane	-----	-----	-----
TOTAL FID as n-Hexane	-----	1,150	1,600
MTBE	20 (HAL)	428	226

BPQL = Below Practical Quantitation Limits (for this test, 1 ppb)

HAL = Health Advisory Limit

LABORATORY REPORT



CLIENT: Dubois & King
ADDRESS: P.O. Box 339, Rte 66 Professional Center
Randolph, VT 05060

SITE: CVPS Woodstock
ATTENTION: Russell Rohloff
MATRIX: Groundwater

LABORATORY NO: 4-0881
PROJECT NO: 80439
DATE OF SAMPLE: 5/5/94
DATE OF RECEIPT: 5/5/94
DATE OF REPORT:

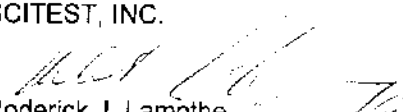
RESULTS

(Results expressed in milligrams per liter (mg/L) unless otherwise noted)

Parameter	Method Nos	Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	Trip Blank	Field Blank
Water Depth	---	Feet	11.2	2.7	13.3	9.1	8	10.2	---	---
Temperature	---	°C	7	---	7	5	6	5	---	14

Respectfully submitted,

SCITEST, INC.


Roderick J. Lamothe
Laboratory Director



LABORATORY REPORT

CLIENT: Dubois & King
ADDRESS: P.O. Box 339, Rte 66 Professional Center
Randolph, VT 05060

SITE: CVPS Woodstock
ATTENTION: Russell Rohloff

LABORATORY NO: 4-0881
PROJECT NO: 80439
DATE OF SAMPLE: 5/5/94
DATE OF RECEIPT: 5/5/94
DATE OF ANALYSIS: 5/17-19/94
DATE OF REPORT: 5/25/94

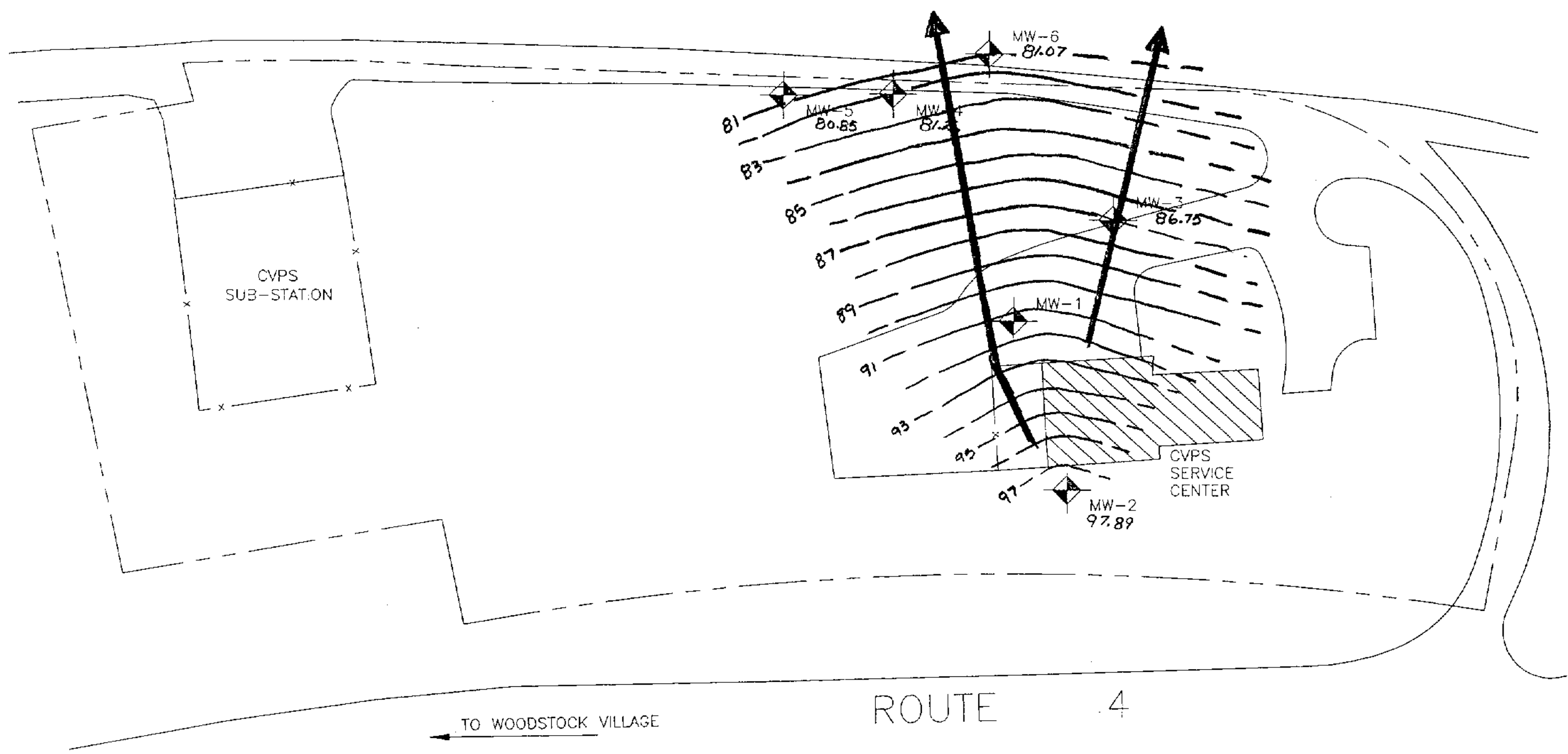
Results
(Results expressed in micrograms per liter (ug/L))

PARAMETER	1 MW-1	2 MW-3	3 MW-4	4 MW-5	5 MW-6	6 Trip Blank	7 Field Blank	QC SPIKE MW-5
Methyl Tertiary Butyl Ether	122	2	BPQL	BPQL	226	BPQL	BPQL	110%
Benzene	169	4	BPQL	BPQL	409	BPQL	BPQL	105%
Toluene	2080	14	BPQL	BPQL	12	BPQL	1	100%
Ethylbenzene	733	14	BPQL	BPQL	224	BPQL	1	97%
Total Xylenes	5020	301	BPQL	BPQL	20	BPQL	3	85%
BTEX	8002	333	BPQL	BPQL	665	BPQL	5	---
Chlorobenzene	< 50	BPQL	BPQL	BPQL	< 10	BPQL	BPQL	104%
1,2-Dichlorobenzene	< 50	BPQL	BPQL	BPQL	< 10	BPQL	BPQL	97%
1,3-Dichlorobenzene	< 50	BPQL	BPQL	BPQL	< 10	BPQL	BPQL	96%
1,4-Dichlorobenzene	< 50	BPQL	BPQL	BPQL	< 10	BPQL	BPQL	97%
Surrogate % Recovery	99%	98%	95%	101%	104%	98%	100%	100%
Total FID Hydrocarbons (including BTEX) as Xylene	12100	1610	BPQL	BPQL	1600	BPQL	3	---


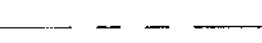
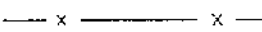
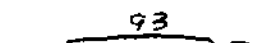

EPA Method 602

BPQL = Below Practical Quantitation Limit, 1 ppb

Matrix Spike results are expressed as % Recovery of a 23 ppb spike.




LEGEND

-  MW-5 MONITORING WELL
-  PROPERTY LINE
-  FENCE
-  93 GROUNDWATER CONTOUR
-  GROUNDWATER FLOW DIRECTION

SCALE 1" = 50'

FLOW DATA SHOWN FOR 5-5-94 SAMPLING EVENT

 engineering planning management development	MONITORING WELL LOCATION C.V.P.S. WOODSTOCK, VERMONT		DRAWN BY RWB	DATE OCT 93
			CHECKED BY RWR	PROJ. NO. R11896
			PROJ. ENG. RWR	DRAW. NO.
			SHEET 1 OF 1	